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ABSTRACT

Two studies examined the impact of songs on students' verbatim recall and understanding of central story information. In a naturalistic study, students who had frequently viewed an educational television song about the Preamble to the Constitution later (as young adults) recalled the words verbatim better than did those who had been infrequent viewers of the production. In an experimental study, 40 college students and second graders either listened to or viewed a 3-minute educational bit about the Revolutionary War in one of four treatment conditions. Students then answered 16 verbal multiple-choice questions about the central content. Recognition scores were submitted to an analysis of variance. Results indicated that recognition of essential story information from a similar televised vignette was better in spoken than in sung presentations. Findings suggest that verbatim recall is superior when presented by either rhyme or song, but that recognition favors prose and nonsinging presentations. (Author/RS)

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Impact of Singing on Students' Verbatim Recall and Learning

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Abstract

Two studies examined the impact of songs on students' verbatim recall and understanding of central story information. In a naturalistic study, students who had frequently viewed an educational television song about the Preamble to the Constitution later recalled the words verbatim better than did those who had been infrequent viewers of this production. By contrast, the experimental study demonstrated that recognition of essential story information from a similar educational televised vignette was better in spoken than in sung presentations. Results are discussed within a levels of processing framework and educational implications are then considered.

Impact of Singing on Students' Verbatim Recall and Learning

Sandra L. Calvert

Songs are musical forms that cultures have used to transmit verbal information for centuries, yet we know little about how songs are actually remembered and understood. The purpose of the studies reported here is to examine the mechanisms by which both children and adults remember and understand the messages of songs.

Singing, an auditory feature, could potentially facilitate or disrupt learning of verbal content. On the one hand, a musical tune provides an additional structure which could facilitate verbal recall. More specifically, music typically repeats a melody and a verse, providing a structure to rehearse the most important lyrics (Sloboda, 1985). On the other hand, music could distract people from deeper processing of the message and interfere with comprehension, particularly since both verbal and musical forms are auditory in nature and might both be processed in the same auditory channel.

The way that learning is assessed may also yield differential effects in how well children remember songs. In children's processing of nursery rhymes, for instance, children's verbatim word-for-word recall of rhymes is superior to prose passages (Johnson & Hayes, 1987), but prose passages are actually better understood (Hayes, Chemelski & Palmer, 1982). Because rhyme also characterizes songs, similar effects might be expected. Consequently, both verbatim recall and recognition

were examined in this research.

The purpose of the studies reported here was to examine the impact of songs vs. spoken forms of presentation on students' verbatim recall and recognition of central story content. Superior verbatim recall was expected in singing conditions whereas superior recognition of central information was expected in spoken conditions. Both naturalistic and experimental methodologies were employed.

Method & Results

In the naturalistic study, children who had frequently viewed a three-minute educational television presentation about the Preamble to the Constitution later (as young adults) recalled 73% of the text whereas infrequent viewers recalled only 17% of the text, $t_{(14)} = 4.50$, $p < .001$. Moreover, frequent viewers of the Preamble passage reported singing the words as a recall aid more often than did infrequent viewers, $_{(1)} = 9.60$, $p < .005$. This level of recall was truly remarkable since these bits have not been aired for at least a decade. The findings suggest that singing is an effective long-term memory system for verbatim recall of educational televised content.

In the experimental study, forty college students and second graders either listened to or viewed a three-minute educational bit about the Revolutionary War in one of four treatment conditions: verbal track only, singing only, verbal and visual track, and singing and visual track. Students then answered 16 verbal multiple-choice questions about the central content.

Recognition scores were submitted to a 2 (grade) by 2 (singing) by 2 (visual) between-subjects analysis of variance. Students in nonsinging conditions recognized more central information than did students in singing conditions, F (1,32) = 8.70, $p < .01$ (M = 7.90 vs. 6.35). As seen in Table 1, college students recalled more information

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Insert Table 1 about here

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than did second graders, F (1,32) = 53.66, $p < .001$, but college students performed better in nonvisual than visual conditions while the opposite pattern was true of second graders, F (1,32) = 7.61, $p < .01$.

Discussion

These results parallel those reported in children's processing of nursery rhymes (e.g., Hayes et al., 1982). Children's verbatim word-for-word recall is superior when presented by either rhyme or song, but recognition favors prose and nonsinging presentations. In Craik and Lockhart's (1972) model, information can be processed at different levels. Acoustic properties of nursery rhymes and songs may predispose learners to process content at a relatively superficial phonological level (sound) rather than at a deeper semantic level (meaning).

Alternately, beneficial effects of songs may occur only after repeated exposure to them. Repetition allows a listener to

understand the internal structure of a musical composition (Sloboda, 1985). A listener may need to hear the melody several times before this structure improves recall or recognition of verbal material. For example, a verse or chorus that is repeated within a song is better remembered than are other parts of the song (Hyman & Rubin, 1990). Future research in the area of nursery rhymes and songs should examine the role of repetition in relation to recall and recognition.

A final interpretation is that listeners perceive the processing demands of a song and a prose passage differently. Verbally-presented material is rarely remembered verbatim (Sloboda, 1985). Instead, the learner knows to search for the meaning or gist of the passage. By contrast, songs provide a structure that does lend itself to verbatim recall. Specifically, rhythm, rhyme, tune, and meaning all constrain the retrieval of a learner, thereby increasing the probability that exact recall of the material will be possible (Hyman & Rubin, 1990). Moreover, when the original words are forgotten and replaced, people select alternate words that are constrained by the meaning of the song (Hyman & Rubin, 1990). These findings suggest that meaning is clearly considered in memories of songs. Thus, the perceived demand characteristics of a learning situation may affect what the learner appears to have processed.

As in previous research (e.g., Hayes & Birnbaum, 1980), developmental differences were found in recall of verbal information that was presented with visual forms. Previously,

however, visual presentation was found to distract preschoolers from the auditory soundtrack while college students were able to ignore it. These effects were found when the audio and visual tracks were mismatched. In the study reported here, visual presentation supplemented the auditory message. When the visual and auditory track were matched, visual forms of presentation increased second graders' recognition of verbally-presented content whereas nonvisual forms increased college students' recognition. These findings suggest that dual modes of presentation assist second graders who may use iconic modes of thought readily. College students, by contrast, may rely on verbal, linguistic modes of representation and find the visual track redundant and distracting from the verbal task at hand.

In conclusion, the ways that people think and the processes by which we remember information are central issues that psychologists can apply to educational arenas. Teachers often assume that children will remember songs, yet we know little about the combined effects of music and language on memory. This research examined the processes by which children and adults remember songs under both naturalistic and experimental conditions. Singing provides a very effective long term storage system that students can use to organize and retrieve verbal information. But while verbal content can be transmitted in a memorable musical form, the educational challenge may be to enhance their understanding of meaning as well as their recitation of lyrics.

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Table 1

Mean number of central verbal items correct as a function of grade and visual presentation

	GRADE	
	Second	College
FORM		
Nonvisual	4.50[d] (sd=1.44)	9.80[a] (sd=2.39)
Visual	5.90[c] (sd=1.52)	8.30[b] (sd=1.77)
	5.20 (sd=1.61)	9.05 (sd=2.19)

Means with different letter superscripts are significantly different at $p < .01$.